

Residential System Sizing Calculation

Summary

Project Title:
Lunsford Residence

, FL

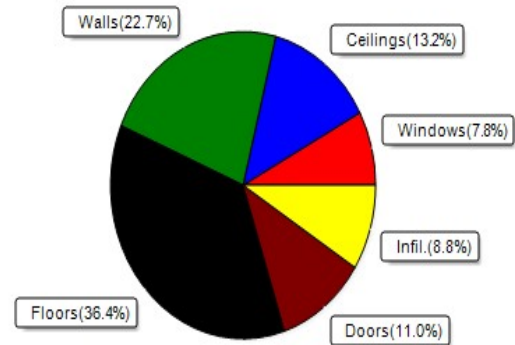
1/14/2025

Location for weather data: Gainesville, FL - Defaults: Latitude(29.7) Altitude(100 ft.) Temp Range(M)			
Humidity data: Interior RH (50%) Outdoor wet bulb (77F) Humidity difference(51gr.)			
Winter design temperature(TMY3 99%)	30 F	Summer design temperature(TMY3 99%)	94 F
Winter setpoint	70 F	Summer setpoint	75 F
Winter temperature difference	40 F	Summer temperature difference	19 F
Total heating load calculation	22793 Btuh	Total cooling load calculation	17785 Btuh
Submitted heating capacity	% of calc Btuh	Submitted cooling capacity	% of calc Btuh
Total (Electric Heat Pump)	131.6 30000	Sensible (SHR = 0.75)	146.1 22500
Heat Pump + Auxiliary(0.0kW)	131.6 30000	Latent	314.0 7500
		Total (Electric Heat Pump)	168.7 30000

WINTER CALCULATIONS

Winter Heating Load (for 1605 sqft)

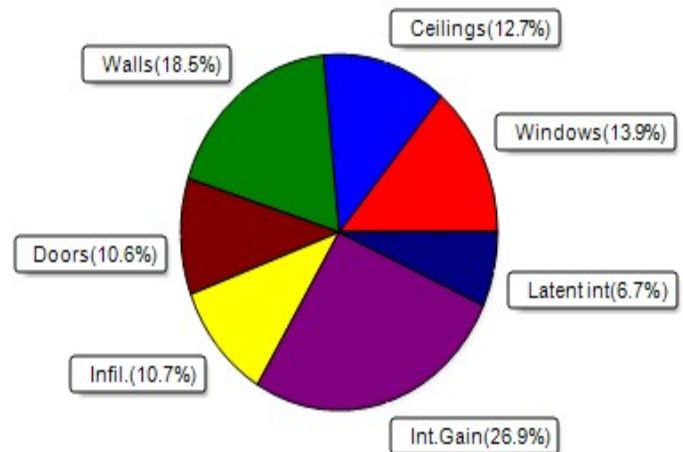
Load component	Load
Window total 172 sqft	1789 Btuh
Wall total 1455 sqft	5167 Btuh
Door total 136 sqft	2502 Btuh
Ceiling total 1605 sqft	3017 Btuh
Floor total 1605 sqft	8307 Btuh
Infiltration 46 cfm	2011 Btuh
Duct loss	0 Btuh
Subtotal	22793 Btuh
Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
TOTAL HEAT LOSS	22793 Btuh



SUMMER CALCULATIONS

Summer Cooling Load (for 1605 sqft)

Load component	Load
Window total 172 sqft	2466 Btuh
Wall total 1455 sqft	3294 Btuh
Door total 136 sqft	1877 Btuh
Ceiling total 1605 sqft	2263 Btuh
Floor total	0 Btuh
Infiltration 34 cfm	716 Btuh
Internal gain	4780 Btuh
Duct gain	0 Btuh
Sens.Ventilation Ex:0 cfm; Sup:0 cfm	0 Btuh
Blower Load	0 Btuh
Total sensible gain	15396 Btuh
Latent gain(ducts)	0 Btuh
Latent gain(infiltration)	1189 Btuh
Latent gain(ventilation)	0 Btuh
Latent gain(internal/occupants/other)	1200 Btuh
Total latent gain	2389 Btuh
TOTAL HEAT GAIN	17785 Btuh



8th Edition

EnergyGauge® System Sizing

PREPARED BY: _____

DATE: _____ 1-13-25

System Sizing Calculations - Summer

Residential Load - Whole House Component Details

Project Title:
Lunsford Residence

, FL

1/14/2025

Reference City: Gainesville, FL (Defaults)
Humidity difference: 51gr.

Temperature Difference: 19.0F(TMY3 99%)
Summer Setpoint: 75 °F (Required Manual J default)

Component Loads for Whole House

Window	Type*					Overhang		Window Area(sqft)			HTM		Load		
	Panes	SHGC	U	InSh	IS Ornt	Len	Hgt	Gross	Shaded	Unshaded	Shaded	Unshaded			
1	2 NFRC	0.33, 0.26	No	No	N	1.5ft	2.3ft	15.0	0.0	15.0	12	12	178	Btuh	
2	2 NFRC	0.33, 0.26	No	No	N	1.5ft	2.3ft	20.0	0.0	20.0	12	12	238	Btuh	
3	2 NFRC	0.33, 0.26	No	No	N	1.5ft	2.3ft	30.0	0.0	30.0	12	12	356	Btuh	
4	2 NFRC	0.33, 0.26	No	No	E	1.5ft	2.3ft	6.0	0.0	6.0	12	37	221	Btuh	
5	2 NFRC	0.33, 0.26	No	No	E	1.5ft	2.3ft	8.0	0.0	8.0	12	37	294	Btuh	
6	2 NFRC	0.33, 0.26	No	No	S	1.5ft	2.3ft	30.0	30.0	0.0	12	14	356	Btuh	
7	2 NFRC	0.33, 0.26	No	No	S	1.5ft	2.3ft	60.0	60.0	0.0	12	14	713	Btuh	
8	2 NFRC	0.33, 0.26	No	No	W	1.5ft	2.3ft	3.0	0.0	3.0	12	37	110	Btuh	
	Window Total							172 (sqft)					2466 Btuh		
Walls	Type					U-Value	R-Value	Area(sqft)			HTM		Load		
							Cav/Sheath								
	1	Frame - Wood - Ext				0.09	13.0/0.0	263.3			2.3		596 Btuh		
	2	Frame - Wood - Ext				0.09	13.0/0.0	84.3			2.3		191 Btuh		
	3	Frame - Wood - Ext				0.09	13.0/0.0	143.0			2.3		324 Btuh		
	4	Frame - Wood - Ext				0.09	13.0/0.0	216.0			2.3		489 Btuh		
	5	Frame - Wood - Ext				0.09	13.0/0.0	413.3			2.3		936 Btuh		
	6	Frame - Wood - Ext				0.09	13.0/0.0	335.3			2.3		759 Btuh		
	Wall Total							1455 (sqft)					3294 Btuh		
Doors	Type							Area (sqft)			HTM		Load		
	1	Insulated - Exterior						24.0			13.8		331 Btuh		
	2	Insulated - Exterior						24.0			13.8		331 Btuh		
	3	Insulated - Exterior						48.0			13.8		662 Btuh		
	4	Insulated - Exterior						40.0			13.8		552 Btuh		
		Door Total							136 (sqft)					1877 Btuh	
Ceilings	Type/Color/Surface					U-Value	R-Value	Area(sqft)			HTM		Load		
	1	SnglAsmb no airsp/DarkShingle				0.047	0.0/21.0	1605.0			1.41		2263 Btuh		
		Ceiling Total							1605 (sqft)					2263 Btuh	
Floors	Type						R-Value	Size			HTM		Load		
	1	Slab On Grade					0.0	1605 (ft-perimeter)			0.0		0 Btuh		
		Floor Total							1605.0 (sqft)					0 Btuh	
	Envelope Subtotal:												9900 Btuh		
Infiltration	Type					Average ACH		Volume(cuft)		Wall Ratio		CFM=		Load	
	Natural					0.13		16050		1		34.4		716 Btuh	
Internal gain						Occupants		Btuh/occupant <td colspan="2">Appliance</td> <td colspan="2">Load</td>			Appliance		Load		
						6		X 230			+		4780 Btuh		
	Sensible Envelope Load:												15396 Btuh		
Duct load	Extremely sealed, Supply(R6.0-Condi), Return(R6.0-Condi)										(DGM of 0.000)		0 Btuh		
	Sensible Load All Zones												15396 Btuh		

Manual J Summer Calculations

Residential Load - Component Details (continued)

Project Title: Climate:FL_GAINESVILLE_REGIONAL_A
Lunsford Residence

, FL

1/14/2025

WHOLE HOUSE TOTALS

Whole House Totals for Cooling	Sensible Envelope Load All Zones	15396 Btuh
	Sensible Duct Load	0 Btuh
	Total Sensible Zone Loads	15396 Btuh
	Sensible ventilation (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Blower	0 Btuh
	Total sensible gain	15396 Btuh
	Latent infiltration gain (for 51 gr. humidity difference)	1189 Btuh
	Latent ventilation gain	0 Btuh
	Latent duct gain	0 Btuh
	Latent occupant gain (6.0 people @ 200 Btuh per person)	1200 Btuh
	Latent other gain	0 Btuh
	Latent total gain	2389 Btuh
	TOTAL GAIN	17785 Btuh

EQUIPMENT

1. Central Unit	#	30000 Btuh
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*Key: Window types (Panels - Number and type of panes of glass)
(SHGC - Shading coefficient of glass as SHGC numerical value)
(U - Window U-Factor)
(InSh - Interior shading device: none(No), Blinds(B), Draperies(D) or Roller Shades(R))
- For Blinds: Assume medium color, half closed
For Draperies: Assume medium weave, half closed
For Roller shades: Assume translucent, half closed
(IS - Insect screen: none(N), Full(F) or Half(½))
(Ornt - compass orientation)



Version 8

System Sizing Calculations - Winter

Residential Load - Whole House Component Details

Project Title:
Lunsford Residence
Building Type: User

, FL

1/14/2025

Reference City: Gainesville, FL (Defaults) Winter Temperature Difference: 40.0 °F (TMY3 99%)
Winter Setpoint: 70 °F (Required Manual J default)

Component Loads for Whole House								
Window	Panes/Type	Frame	U	Orientation	Area(sqft)	X	HTM=	Load
1	2, NFRC 0.33	Vinyl	0.26	N	15.0		10.4	156 Btuh
2	2, NFRC 0.33	Vinyl	0.26	N	20.0		10.4	208 Btuh
3	2, NFRC 0.33	Vinyl	0.26	N	30.0		10.4	312 Btuh
4	2, NFRC 0.33	Vinyl	0.26	E	6.0		10.4	62 Btuh
5	2, NFRC 0.33	Vinyl	0.26	E	8.0		10.4	83 Btuh
6	2, NFRC 0.33	Vinyl	0.26	S	30.0		10.4	312 Btuh
7	2, NFRC 0.33	Vinyl	0.26	S	60.0		10.4	624 Btuh
8	2, NFRC 0.33	Vinyl	0.26	W	3.0		10.4	31 Btuh
	Window Total				172.0(sqft)			1789 Btuh
Walls	Type	Ornt.	Ueff.	R-Value (Cav/Sh)	Area	X	HTM=	Load
1	Frame - Wood	- Ext	(0.089)	13.0/0.0	263		3.55	935 Btuh
2	Frame - Wood	- Ext	(0.089)	13.0/0.0	84		3.55	299 Btuh
3	Frame - Wood	- Ext	(0.089)	13.0/0.0	143		3.55	508 Btuh
4	Frame - Wood	- Ext	(0.089)	13.0/0.0	216		3.55	767 Btuh
5	Frame - Wood	- Ext	(0.089)	13.0/0.0	413		3.55	1467 Btuh
6	Frame - Wood	- Ext	(0.089)	13.0/0.0	335		3.55	1191 Btuh
	Wall Total				1455(sqft)			5167 Btuh
Doors	Type	Storm	Ueff.		Area	X	HTM=	Load
1	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
2	Insulated - Exterior,	n	(0.460)		24		18.4	442 Btuh
3	Insulated - Exterior,	n	(0.460)		48		18.4	883 Btuh
4	Insulated - Exterior,	n	(0.460)		40		18.4	736 Btuh
	Door Total				136(sqft)			2502Btuh
Ceilings	Type/Color/Surface		Ueff.	R-Value	Area	X	HTM=	Load
1	Single as/D/Shing		(0.047)	0.0/21.0	1605		1.9	3017 Btuh
	Ceiling Total				1605(sqft)			3017Btuh
Floors	Type		Ueff.	R-Value	Size	X	HTM=	Load
1	Slab On Grade		(1.180)	0.0	176.0 ft(perim.)		47.2	8307 Btuh
	Floor Total				1605 sqft			8307 Btuh
	Envelope Subtotal:							20782 Btuh
Infiltration	Type	Wholehouse	ACH	Volume(cuft)	Wall Ratio	CFM=		
	Natural		0.17	16050	1.00	45.8		2011 Btuh
Duct load	Extremely sealed, R6.0, Supply(Con), Return(Con) (DLM of 0.000)							0 Btuh

Manual J Winter Calculations

Residential Load - Component Details (continued)

, FL

Project Title:
Lunsford Residence
Building Type: User

1/14/2025

All Zones	Sensible Subtotal All Zones	22793 Btuh
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WHOLE HOUSE TOTALS

Totals for Heating	Subtotal Sensible Heat Loss	22793 Btuh
	Ventilation Sens. Heat Loss (Ex:0 cfm; Sup:0 cfm)	0 Btuh
	Total Heat Loss	22793 Btuh

EQUIPMENT

1. Electric Heat Pump	#	30000 Btuh
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Key: Window types - NFRC (Requires U-Factor and Shading coefficient(SHGC) of glass as numerical values)
or - Glass as 'Clear' or 'Tint' (Uses U-Factor and SHGC defaults)

U - (Window U-Factor)

HTM - (ManualJ Heat Transfer Multiplier)



Version 8